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Competitive Goals and Plant Investment in Environment and Safety Practices: Moderating Effect of National Culture

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ABSTRACT

Operations managers clearly play a critical role in targeting plant-level investments toward environment and safety practices. In principle, a “rational” response would be to align this investment with senior management’s competitive goals for operational performance. However, operations managers also are influenced by contingent factors, such as their national culture, thus creating potential tension that might bias investment away from a simple rational response. Using data from 1,453 plants in 24 countries, we test the moderating influence of seven of the national cultural characteristics on investment at the plant level in environment and safety practices. Four of the seven national cultural characteristics from GLOBE (i.e., uncertainty avoidance, in-group collectivism, future orientation and performance orientation) shifted investment away from an expected “rational” response. Positive bias was evident when the national culture favored consistency and formalized procedures and rewarded performance improvement. In contrast, managers exhibited negative bias when familial groups and local coalitions were powerful, or future outcomes—rather than current actions—were more important. Overall, this study highlights the critical importance of moving beyond a naïve expectation that plant-level investment will naturally align with corporate competitive goals for environment and safety. Instead, the national culture where the plant is located will

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influence these investments, and must be taken into account by senior management. [Submitted: September 19, 2012. Revised: September 26, 2013. Accepted: October 3, 2013.]

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INTRODUCTION

We widely accept that operations managers must pursue multiple strategic priorities, such as cost and quality, in their efforts to build and maintain competitiveness. Moreover, any weighting of these priorities naturally varies both between firms, and for different facilities within a firm, based on underlying competitive objectives. Recently, managers have begun to include environmental management and employee health and safety—again to a varying degree—alongside traditional priorities. In part, one could attribute this consideration to the increasing attention that the popular press and research literature has paid to exploring both opportunities and risks related to these areas (Pagell & Gobeli, 2009). However, strategic priorities on their own mean little unless translated into measurable investment in process improvements and managerial practices.

Unfortunately, the linkage between strategic priorities and operational investment and practice is often muddled by a variety of contextual factors that influence managerial decision making, as noted by recent calls for more contingency focused research in operations management (Sousa & Voss, 2008). One can expect that any relationship is particularly challenging to understand for environment and safety management, where multiple perspectives likely influence local managers to deviate from strategic priorities (Matten & Moon, 2008). For examples, regulations can vary locally, communities demand differing degrees of environmental performance and accountability, and workers in some regions might value employment over safe work practices. More specifically, recent studies in related areas of operations management performance (Kull & Wacker, 2010; Power, Schoenherr, & Samson, 2010; Wiengarten, Fynes, Pagell, & De Burca, 2011) have highlighted the importance of contingent effects associated with national cultural characteristics identified through both the Hofstede (1980) and GLOBE (House, Hanges, Javidan, Dorfman, & Gupta, 2004) studies.

This article seeks to make several related contributions to our understanding of the interactions between national culture, strategic priorities for operations, and investment in plant-level practices. Specifically this contribution is facilitated by a focus on the effect of national culture on the propensity for managers to invest in environment and safety practices (ESP). While recent research has focused on the moderating effect of national culture on the relationship between investment and performance (Wiengarten et al., 2011)—in our article it is on the moderating effect of national culture on the relationship between measurement of plant performance by senior management (i.e., the objectives set plant managers by senior management) and investment by managers in ESP at the plant level. Our article is therefore not an article about the practices-performance model—it is about factors (i.e., cultural contingencies) that might bias the decision making of managers away from an expected rational response that aligns investment with the competitive

priority in that specific area. Our contribution is therefore to empirically examine the motivation for investment rather than the outcomes of investment.

Using a multilevel model with a dataset gathered from 1,453 plants in 24 countries, this study first assessed the relationship between the importance that senior management placed on the competitive goal of environment and safety, and investment in ESP. In principle, these should be highly related in a manufacturing firm, thereby forming an expected “rational” relationship between senior management’s objectives and investment decisions implemented by operations managers at the plant level. Thus, the actions of operations managers are defined as “rational” when managers are “. . . balancing costs against benefits to arrive at action that maximizes personal advantage” (Friedman, 1953 p. 15). As such, we use a basic assumption of positive economics—that individuals will seek to maximize utility—to represent a hypothetical expected rational response on the part of a manager (captured in this study through decisions about the level of investment) to performance measurement in a specific area by senior management.

Based on this rational response, we then explored how national culture influenced managers to diverge plant-level investment in practices away from the competitive priorities set by senior management. Moreover, we also explore how the sensitivity of a manager to the competitive goals of senior management was either amplified or reduced, contingent on the influence of national culture. In this way, we measure the bias associated with this contingent factor and demonstrate the influence national culture has on moderating investment decisions in responding to a senior management focus on ESP performance.

LITERATURE REVIEW

National Culture and Investment in ESP

Within the broader operations management literature national culture has been examined in a number of contexts. The role of national culture has been extensively researched in the context of manufacturing capability and performance (Kull & Wacker, 2010; Power et al., 2010; Wiengarten et al., 2011). However, where studies have been conducted incorporating both national culture and investment in this area of operations the relationship between the two has often been peripheral to the study (Margolis & Walsh, 2003), focused on a limited range of cultural characteristics (often only one) (Waldman et al., 2006) or based on a single or limited number of countries (Sharma & Henriques, 2005).

Investment in ESP in operations can potentially vary across organizational and national cultures for multiple reasons. First, operational goal alignment across a multinational’s network relies heavily on the use of standardized policies and practices. While some practices may suit the “home” culture where they were designed, differences might arise when attempts are made to scale and replicate these internationally (Ho, Wang, & Vitell, 2012). Second, managerial and employee perceptions of the dominant values of their workplace can often be more important than more formal, corporate policies (Kull & Narasimhan, 2010). This has been particularly problematic for more responsibility-oriented practices such as workplace safety and ethics procedures. Third, managerial commitment to

safety and ethics procedures influences employees as they make related decisions (Cavazza & Serpe, 2009). Employees that perceive weak managerial commitment to ethics and safety policies, for example, have been shown to encourage counterintuitive workplace behaviors and avoidance of such requirements (Brown, Willis, & Prussia, 2000). Thus, employees can defer to informal values of their workplace when dealing with decisions of social responsibility.

To date, however, little empirical study has been reported that explores potential interactions between national culture and workplace commitment to requirements for ESP (Ho et al., 2012). Recent studies have highlighted significant gaps between what organizations intend to implement and what they actually do with respect to ESP (Brown et al., 2000; Pagell & Gobeli, 2009). Furthermore, a handful of studies have investigated whether international factors such as distance and culture at the national level might exacerbate this problem (Ho et al., 2012). Cultural factors, however, that might contribute to managerial evaluation and investment in ESP have received surprisingly limited attention (Campbell, Eden, & Miller, 2012; de Koster, Stam, & Balk, 2011).

Improved use of ESP are beneficial to firms for reasons such as reduced environmental penalties, lower costs of production, less pollution, and greater shareholder comfort (Jacobs, Singhal, & Subramanian, 2010; Pagell & Gobeli, 2009). Where firms can ensure greater use of such practices not just in their home country operations but also across their global operations, even greater benefits are expected. Differences between countries, however, in the understanding of and the importance placed on a firm's requirements for ESP, may vary significantly.

While employees are known to rely on both formal and informal information in their workplace when performing work, they also use national cultural values to interpret and evaluate tasks. Employees sometimes do not follow through on corporate-mandated tasks such as safety and equipment checks even though the neglect of such tasks might lead to critical operational failures (Gowen, Mcfadden, Hoobler, & Tallon, 2006). Oftentimes it is the culture of the workplace that influences employee's choices more than their knowledge of corporate procedures.

Using as an example the cultural dimension of uncertainty avoidance (UA) the GLOBE study predicts that there can be significant variance expected in decision making across cultures such that:

"In organizations that function in high uncertainty avoidance cultures the decision making is likely to be more formalized and analytical. In organizations that function in low uncertainty avoidance cultures, decision making is likely to be based more on intuition than formal analysis" (House et al., 2004 p. 6). On this dimension of UA alone it could be expected that both the formal assessment of environmental performance and the propensity to invest in sustainable methods and systems of production will be variable.

How culture might influence the investment in ESP by managers is important to our understanding of how global ESP policies might perform in cross-cultural settings. Employees bring a wide range of values into the workplace including those relevant to their interorganizational and interpersonal tasks. Because of this the potential for interaction between global ESP requirements and more localized cultural dimensions is significant. For operations management researchers

this interaction has implications for the use of safe work, ethical reporting and environmental management generally.

Managerial Discretion and Investment in ESP

Managerial discretion (specifically in this study the discretionary choices of managers) has been shown to significantly influence the investment choices of organizations toward sustainable production (Berrone & Gomez-Mejia, 2009). Managers can allocate resources for sustainable production (Klassen & Whybark, 1999), champion-specific performance issues (Gattiker & Carter, 2010) and directly influence organizational strategy (Branzei, Ursacki-Bryant, Vertinsky, & Zhang, 2004). Choices of managers, and the processes by which these choices are made, have therefore been found to be a significant factor in decisions of where and how to invest in environment and safety programs (Berrone & Gomez-Mejia, 2009).

One of the more prevalent themes when managerial actions toward investment in ESP are examined has been the role of a supportive organizational culture that values environmental protection and employee welfare. A supportive culture, particularly at the senior management or board level, has been shown to be demonstrably significant to the improvement of environmental performance (Cordano & Frieze, 2000). Within this body of research, managerial choices based on a rational assessment of alternatives have been found to be a significant driver of more sustainable production both individually (Gattiker & Carter, 2010) or in the presence of equivalent organizational support (Branzei et al., 2004). Recent studies have emphasized the importance of individual championing by managers (Gattiker & Carter, 2010) and individualized incentives such as increased executive pay and its impact on environmental investments (Berrone & Gomez-Mejia, 2009).

Other studies, however, have found that managerial interest in environment and safety is most likely only where *both* individual personal values and the organization's values toward environmental issues are aligned (Bansal, 2003). Several scholars have also identified positive attitudes at the operational and strategic managerial level toward both protection of the environment and employee welfare as an important precursor to related performance improvement (Klassen & Whybark, 1999; Pagell & Gobeli, 2009). In the area of investment in ESP in particular the alignment of the focus of senior managers with the resource allocations at the plant level is shown by these studies to be important. In recognition of this it is the findings of these studies in particular that lead us to operationalize a "rational" response in terms of the relationship between managerial actions at these two levels.

HYPOTHESES

Rational Managerial Actions

We propose our first hypothesis by arguing that the relationship between competitive goals and the decision to invest resources to support further progress toward any goal would be a positive and significant one. We take this position based on the logic that such a relationship represents a "rational" response by a manager to a focus being placed on a specific area of performance for which they are

responsible. When senior management place an emphasis on a particular area of performance the “rational” manager would also be expected to have a keener focus on this same area promoting further investment. This position finds support in the strategy literature where the relationship between formulation of strategy and implementation of strategy is seen to be an important antecedent of strategic focus (Raes, Heijltjes, Glunk, & Roe, 2011). We also propose that this response by managers would be “rational” if it were proportional to the emphasis being given by senior management to that particular metric (in this case environment and safety performance). We therefore hypothesize that:

H1: The relative importance that senior management places on environment/safety is positively related to the level of plant-level investment in environmental and safety practices.

Moderation of Rational Managerial Actions by National Culture

Power distance (PD)

PD has been defined by the GLOBE study as “... the degree to which members of an organization or society expect and agree that power should be shared unequally” (Carl, Gupta, & Javidan, 2004 p. 53). This cultural dimension does not equate to unequal distribution of power as such, but rather to the expectation that it is acceptable for those with greater power to be able to leverage this power for their benefit, perhaps at the expense of the weak. A society high in PD has been shown to be characterized by those more powerful having a bias toward maintaining and extending this imbalance in their favor, and the greater that “PD” becomes the more the powerful will attempt to further extend their influence (Mulder, 1977). This characteristic is compounded by Hofstede’s (Hofstede, 1980) finding that “... (the) high power distance index was associated with significant dependence of the subordinate on bosses” (Hofstede cited in Carl et al., 2004 p. 529).

In terms of investment in ESP we would expect that in a high PD culture senior management focus on measuring environmental performance would be supported by investment in ESP related programs (this could even imply an “overresponse”) due to an expected propensity/willingness to fall in line with expectations of those in power (senior management). As such we would expect decisions to invest in ESP to be particularly sensitive to senior management that strategically emphasize environmental and safety management.

H2: The national cultural characteristic of power distance positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in ESP.

Uncertainty avoidance

In the GLOBE study UA is defined as “... the extent to which members of collectives seek orderliness, consistency, structure, formalized procedures and laws to cover the situations in their daily lives” (de Luque & Javidan, 2004 p. 603). The underlying premise is that ambiguity can be reduced, with managers in high UA societies expressing a preference to work within existing frameworks and to preserve the status quo. This view has implications for the innovation potential of

societies high in UA with studies indicating that intolerance of uncertainty (high UA) is not conducive to building innovation capability (Shane, 1993). Innovation capability has been linked positively to adoption of environmentally responsible policies and methods (King & Lenox, 2002), as well as to the development and exercise of stakeholder pressure in this context (Gonzalez-Benito & Gonzalez-Benito, 2006). In high UA cultures, a combination of low innovation capability and low stakeholder pressure along with a propensity to maintain the status quo would make it unlikely that the objectives set by senior management would be contradicted. In fact we would argue that this would be consistent with their being a bias toward being sensitive to the objectives set by senior management. We would therefore hypothesize that in such a society:

H3: The national cultural characteristic of uncertainty avoidance positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in ESP.

Institutional collectivism (IC)/in-group collectivism (CG)

The GLOBE study breaks Hofstede's continuum individualism/collectivism (IDV) into two (both measured as collectivism), one at the level of societal institutions facilitating collectivism (IC), the other measuring collective identity at the local family level (CG). IC is defined as "... the degree to which institutional practices at the societal level encourage and reward collective action" (House et al., 2004 p. 463). We would argue in cultures where societal institutions have a strongly collectivist orientation there is more likely to be a strong focus on the well being of the broader community. Such an orientation is consistent with a belief that the firm (i.e., seen as a societal institution) has a responsibility to contribute to the well being of society by being a good corporate citizen (Moorman & Blakely, 1995). Moreover, a collectivist culture would reinforce any senior management focus on environmental performance because of a strong alignment with a bias toward the collective good of society. In support of this proposition, Janssens et al. (1995) studied employee interpretations of a global safety policy across foreign subsidiaries of a US multinational. While the safety policy remained the same across three countries, managers within a culture that placed a higher value on IC were more likely to be conscious of social responsibility in their decision making.

We expect that such an orientation would lead to an increased appreciation of the inherent benefits of investment in ESP. It would also be consistent with the expectation in a collectivist society that those in power should be obeyed (i.e., there is a recognized correlation between collectivism at an institutional level and PD [Hofstede, 2001; Hofstede & Hofstede, 2004]). We would therefore hypothesize that:

H4: The national cultural characteristic of institutional collectivism positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in ESP.

In contrast to IC, CG is defined as “... *the degree to which individuals express pride, loyalty and interdependence in their families*” (Gelfand, Bhawuk, Nishii, & Bechtold, 2004 p. 463). This represents a different type of collectivism that is more local in focus, and more centered around families or clans than the broader society. As such the propensity for this association with the interests of smaller local groups to influence the sensitivity of investment decisions to an environmental focus by senior management will be largely dependent on whether this aligns with family values.

The authors of the GLOBE study indicate that a notable characteristic of their measuring individualism/collectivism using two separate scales—one at the family level and the other at that of institutions is that “... *the two different GLOBE measures of Collectivism are differentially related to other cultural dimensions*” (Gelfand et al., 2004 p. 472). A notable case is that while IC is positively associated with UA, CG has a negative association (for this and subsequent discussion of GLOBE correlations below see Gelfand et.al. 2004 pp. 472–473). Further, IC is positively associated with performance orientation (PO) while CG has no significant association with PO. In the case of this negative association between CG and UA support is provided for CG being either a negative moderator or for any positive effect being counteracted by the society being low in UA.

Vachon (2009) provides empirical support for this proposition when he found the use by corporations of sustainable production practices (e.g., environmental innovation and fair labor practices) most likely within national cultures exhibiting high levels of individualism and UA. Further support for this position is provided by CG having no significant correlation with PO indicating that managers in high CG cultures will not necessarily be as focused on PO therefore possibly reducing propensity to invest in response to the performance focus of senior management. PO is argued in our justification of H9 to be a positive moderator so a lack of association with CG further indicates that CG may at best be neutral in its moderating effect.

Further, we argue that collectivism with such a local focus will facilitate the pursuit of more localized agendas around the well-being of the family group rather than a strong focus on what is good for society, or even on what senior management believe is most important. In particular, cultures high in CG are often low in economic development (Gelfand et al. 2004 p. 481) indicating a stronger focus on more immediate economic concerns than longer term environmental or safety issues.

Under such conditions it could be expected that a “rational” alignment between the performance focus of senior managers and investment will be reliant on alignment with family based values and priorities. Put another way, if there is perceived conflict between pressure to invest in ESP and, for example, financial outcomes that potentially impact on family group welfare, this may lead to a resistance to invest in ESP irrespective of pressure from senior management. Under these circumstances we expect that the sensitivity of investment decisions to a focus on environmental performance by senior management to be variable and indeed could have a negative bias. The likelihood of an alignment of values and practice between environmental performance measurement and investment in ESP we would suggest would be low, and in fact could conflict with local family-level

objectives to maximize economic utility. Put another way such an orientation could lead to a mentality whereby the relationship between senior management focus and investment is moderated by local intuition and the interests of local coalitions. As such we would hypothesize that:

H5: The national cultural characteristic of in-group collectivism negatively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in ESP.

Humane orientation (HO)

HO is defined as "...the degree to which individuals in organizations or societies encourage and reward individuals for being fair, altruistic, friendly, generous, caring and kind to others" (House & Javidan, 2004 p. 13). This construct was developed for the GLOBE study to reflect the characteristic Hofstede defines as "nurturing" (measured through the Masculinity dimension). Given the positive correlation of this characteristic with IC, this dimension is characterized by "...practices aimed at maximizing collective interests and achievement in a supportive, non-assertive way" (Kabaskal & Bodur, 2004 p. 575). The propensity for "nurturing" has also been associated with valuing quality of life, cooperation, and caring for others.

Thus, a strong HO is expected to be consistent with influencing managers toward actions that would improve the quality of life and take into account the needs of stakeholders. The strong association with a collectivist mindset is consistent with our arguments regarding IC: A high HO society would have a keener appreciation of the inherent benefits of investment in ESP, consistent with promoting the collective good. Overall, a culture high in HO would be expected to encourage senior managers to emphasize environmental performance, which in turn leads to subsequent higher than expected investment in ESP.

H6: The national cultural characteristic of humane orientation positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in ESP.

Future orientation (FO)

The GLOBE study defines FO as "...the degree to which a collectivity encourages and rewards future-oriented behaviors such as planning and delaying gratification" (Ashkanasy, Gupta, Mayfield, & Trevor-Roberts, 2004 p. 282). Such a society could be expected to have foresight and an awareness of the future implications of current actions. Being immediately sensitive to the short-term focus of senior management (as indicated by current performance measurement focus) is expected to be amplified in a culture where such a focus can be seen to be leading toward future benefit. This could be expected to lead to higher levels of investment in systems and processes promoting ESP in the immediate term.

H7: The national cultural characteristic of future orientation positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in ESP.

Performance orientation

The GLOBE study defines PO as reflecting “. . . the extent to which a community encourages and rewards innovation, high standards, excellence, and performance improvement” (House et al., 2004 pp. 30, 239). We argue that in such a society whatever objectives were set by senior management there would be a high likelihood of a more positive response from those charged with implementing these objectives. We would expect the performance bias to be reflected in a strong response to signals sent from senior management regarding their performance expectation. Under these circumstances if senior management were measuring environmental performance we would expect that this would be reinforced by investment in ESP supportive of these objectives. We would therefore hypothesize that:

H8: The national cultural characteristic of performance orientation positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in ESP.

METHOD

Dataset for Investment and Practice

The data used to test the hypotheses has been derived from two separate international studies: Global Manufacturing Research Group (GMRG) fourth-round survey (Whybark, Wacker, and Sheu, 2009), and the GLOBE study of national cultural characteristics (House et al., 2004). The GMRG is a multinational group of operations management researchers who gather empirical data with the manufacturing plant being the unit of analysis. The questionnaire (developed in English) is translated into the native language of a country by a rigorous process of translating and backtranslating of the English original, ensuring equivalency, validity, and reliability of the translated surveys. After administering the survey in the various countries the data are pooled by a central data administrator, checked for consistency and integrity, and redistributed to participating researchers.

The questionnaire is also periodically discussed, revised and finalized at an annual meeting to promote comparability and clarity of questions and research objectives across different countries and cultures. For the fourth round of the survey (2006–2008), additional constructs were included to capture the rapidly developing topics of sustainable development, including environmental, and safety management. Responses were received from plant managers of 1,453 manufacturing facilities in 24 countries and 21 industry classifications, with most facilities having between 50 and 500 employees. The general methodology for GMRG surveys is further detailed in Whybark (1997), and the sample size for each country used in this analysis is reported in Table 1. Overall, the global coverage of this dataset offers good cross-cultural generalizability.

Dataset for National Culture

The GLOBE dataset expands Hofstede's culture dimensions from four to nine using scales developed through a multistage Q-sort process, forward- and

Table 1: Measures of national culture.

Country	N ^a	Globe Scores for National Cultural Characteristic ^{b,c}						
		PD	IC	GC	HO	UA	FO	PO
Albania	15	4.44	4.45	4.28	5.51	4.40	3.69	4.57
Australia	50	4.81	4.40	4.31	4.14	4.32	4.09	4.37
Austria	17	5.00	5.10	4.34	4.89	3.77	4.47	4.47
Brazil	30	5.24	3.74	3.94	5.16	3.76	3.90	4.11
Canada	92	4.85	4.54	4.36	4.22	4.51	4.40	4.46
China	57	5.02	4.81	4.67	5.86	4.29	3.68	4.37
Croatia ^d	93	5.23	3.62	3.74	5.35	3.66	3.46	3.73
Fiji ^c	110	5.12	4.30	5.82	4.60	3.86	4.15	3.88
Finland	139	5.08	5.11	4.77	4.23	4.19	4.39	4.02
Germany	59	5.59	5.27	3.82	4.37	3.37	4.22	4.29
Ghana ^d	63	5.80	4.29	4.14	5.55	4.10	4.09	3.92
Hungary	53	5.57	3.26	3.63	5.31	3.39	3.31	3.50
Ireland	51	5.13	4.25	4.57	5.12	4.96	3.93	4.30
Italy	54	5.45	3.85	3.75	4.99	3.66	3.34	3.66
Korea	115	5.69	3.52	5.20	5.71	3.73	3.90	4.53
Macedonia ^d	39	4.90	3.99	3.85	5.40	3.92	3.61	3.96
Mexico	105	5.07	4.06	3.95	5.62	3.84	3.75	3.97
New Zealand	23	5.12	4.86	4.96	3.58	4.43	3.46	4.86
Nigeria	31	5.53	4.14	4.00	5.34	3.96	3.95	3.79
Poland	57	5.09	3.71	4.51	5.55	3.67	3.23	3.96
Sweden	32	4.94	5.36	5.26	3.46	4.09	4.37	3.67
Switzerland	34	5.03	5.24	4.26	3.93	3.86	4.58	4.70
Taiwan	50	5.00	4.04	4.30	5.45	3.82	3.65	4.27
USA	84	4.92	4.15	4.21	4.22	4.18	4.13	4.45

Notes: ^aCountry-level sample size from Global Manufacturing Research Group database. Total number of observations = 1,453.

^bGLOBE's response-bias corrected cultural practice scores are reported for each country.

^cPD = power distance; IC = institutional collectivism; GC = in-group collectivism; HO = humane orientation; UA = uncertainty avoidance; FO = future orientation; PO = performance orientation.

^dEstimates for several countries not directly measured in the GLOBE study had to be estimated using regional, historical, and population similarities (Gupta and Hanges, 2004). More specifically, Ghana is estimated using West African scores (Hale and Fields, 2007). Macedonia is estimated by averaging Greece and Albania scores (Poulton, 2000). Croatia is estimated by averaging the Macedonian estimate and Hungary scores (Tipuric et al., 2007). Fiji is estimated by averaging Philippine, Indonesia, and India scores (Norton, 1993).

backtranslation, numerous pilot studies, multilevel factor analyses, and validity tests (House et al., 2004). The GLOBE study uses two measures for each cultural dimension, one of cultural "practice" (as-is), the other of cultural "values" (should-be). This study used the former to capture the seven national culture characteristics of interest (i.e., PD, UA, IC, CG, HO, FO, and PO). Two dimensions—Assertiveness and Gender Egalitarianism—were not included as along with HO they were developed by the GLOBE authors to, in combination, represent different aspects of Hofstede's "Masculinity" dimension. Assertiveness emphasizes the

importance of aggressiveness, toughness or tenderness in a social context (Den Hartog, 2004). Gender Egalitarianism has a focus on the roles men and women play in society and we determined that it would be difficult in logic and in fact to argue the case for moderation of investment decisions using this dimension. Both of these dimensions also focus more on personal relationships and interactions, so HO was in our judgment the single dimension from this group most relevant to the research problem as it focused more on cultural bias at a societal rather than a personal level.

The validity and reliability of these measures for the purposes of this study are taken to be acceptable based on the multitude of studies that have been conducted using them, and by the rigorous testing to which each has been subjected House et al (2004). Individual items for each scale are extensively documented and discussed elsewhere (House et al., 2004). Response-bias corrected GLOBE scores for each dimension were used for the GMRG countries, if available, or alternatively, derived from culturally similar countries based on prior research (detailed in Table 1).

Investment in Environmental and Safety Practices

The study of environmental management practices by operations management researchers converges around three main types of management practice: pollution reduction and prevention; use of environmental management systems (e.g., ISO 14001, which includes systems for managing health and safety); and improved resource efficiency through recycling or waste reduction. These activities have been established by several studies to be likely to lead to environmental performance benefits (Klassen & Whybark, 1999; Cordano & Frieze, 2000; Berrone & Gomez-Mejia, 2009; Gattiker & Carter, 2010). This dependent variable was defined using items that have been used in studies exploring sustainable production across multiple contexts (Zhu & Sarkis, 2004; Pagell, Krumweide, & Sheu, 2007). In general, these items are foundational for improving environmental performance, capture both structural and process-oriented changes, and are indicative of a more sustainable approach to materials management (e.g., recycling of waste). Survey respondents provide an indication of their plant's investment in ESP using a seven-item scale (Table 2).

ISO14001 has been connected to the use of more advanced environmental management practices generally as well as improvements in overall environmental performance. Management of work place health and safety makes up an important element of this standard. Environmentally proactive companies are more likely to adopt ISO14001 (Gonzalez-Benito & Gonzalez-Benito, 2006) and certification to the standard has been linked to environmental performance gains by several studies (Melnyk, Sroufe, & Calantone, 2003; Zhu & Sarkis, 2004). *Pollution prevention* is an established indicator of a more pollution-source oriented approach to a company's potential environmental impact (Zhu & Sarkis, 2004). *Recycling of materials* and *waste reduction* activity have been linked to both a more sustainable production orientation, closed-loop thinking, and a wide range of environmental, operational, and economic performance benefits. Recycling and waste reduction diverts material from landfill, lowers raw material requirements for the organization and reduces the impact of land-based containment systems. Work

Table 2: Confirmatory factor analysis for investment in environment and safety practices (ESP).^a

Measure	Factor Loading for ESP ^b	R ²
Extent invested resources in–		
ISO 14000	0.437	0.191
Pollution prevention	0.692	0.479
Recycling of materials	0.776	0.603
Waste reduction	0.807	0.651
Health/safety	0.563	0.318

^aFit statistics: $\chi^2 = 156.7$ (12), CFI = 0.970, NFI = 0.967, SRMR = 0.053, RMSEA = 0.091. To allow more degrees of freedom, an iteration estimated error variances that were subsequently specified.

^bComposite reliability with (without) ISO14000 = 0.795 (0.807), average variance extracted with (without) ISO14000 = 0.448 (0.516). ISO 14000 retained for theoretical purposes.

Table 3: Relative importance of senior management's competitive goals for operations (EES).

	Mean ^a	SD
1. Cost	26.8	15.4
2. Quality (conformance to specifications)	25.7	13.1
3. Delivery timeliness	17.8	11.8
4. Product variety/volume	12.1	11.6
5. New product design/innovation	12.7	11.7
6. Environment/safety	12.1	11.8

Note: ^aNote that 91.5% of respondents successfully summed to exactly 100, with 95% within ± 10 points total.

Only the relative importance of the environment/safety competitive goal (%) is used as an independent variable (labeled EES).

place health and safety is integral to environmental regulation in many countries and has been incorporated into many prior studies in this area (Henriques & Sadorsky, 1999; Pagell & Gobeli, 2009) and has most recently been conceptually linked to environmental performance (Plambech, Lee, & Yatsko, 2012). As our independent variable measures the importance placed on environment and safety issues by senior management it is also important that the dependent variable incorporates both environment and safety investment as well. Validity for the scale was assessed using CFA as described in more detail in the section titled "Assessing Measurement Equivalence across Countries" below (see Table 2 for loadings).

Relative Importance of Environment and Safety

A primary independent variable of interest was the importance placed by senior management on competitive goal of environment and safety, relative to other competitive goals (EES). This variable was measured as a percentage relative to other operational goals, such as cost and quality (Table 3), that a plant might be

Table 4: Industry groups.

Group	<i>N</i>	Specific Industry
Food and related products	114	Food and kindred products Tobacco products
Textiles, clothing, and footwear	74	Textile mill products Apparel and other finished products made from fabrics and similar materials Leather and leather products
Timber and related products	120	Lumber and wood products, except furniture Paper and allied products Printing, publishing and allied industries Furniture and fixtures
Petrochemicals and related products	121	Petroleum refining and related industries Chemicals and allied products Rubber and miscellaneous plastics products
Metal-based products	277	Primary metal industries Fabricated metal products, except machinery and transportation equipment Manufacture of motor vehicles, trailers, and semitrailers Manufacture of other transport equipment
Computing, electronics, and related products	412	Electronic and other electrical equipment and components, except computer equipment Industrial and commercial machinery and computer equipment Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks
Miscellaneous products	335	Miscellaneous manufacturing industries Stone, clay, glass, and concrete products
Total sample	1,453	

expected to pursue. Single item metrics can be used when measures are clear and readily interpretable by respondents (Bergkvist & Rossiter, 2007).

Control Variables

In order to capture variance that could be related to factors other than national culture, industry variance was partitioned (Table 4) using the cross-classification method in Hierarchical Linear Modelling (detailed in section titled Results). Six control variables also were included (Table 5). The *proportion of international ownership* accounted for the effect of the values, priorities, and culture of an overseas owner. *Plant size* (number of employees) was incorporated to allow for variance

Table 5: Control variables—general demographics.

Model Abbreviation	Item (Variable in Regression Models)
IO	What percent of the plant ownership is international? (% ownership)
SZ	Approximately how many total employees work for the plant? (employees)
AG	What is the approximate average age of the plant's production equipment? (years)
IN	On average, over the last two years, about what per cent of annual sales has been invested in new manufacturing equipment at this plant? (% of annual sales)
PR	Using an index of 100 as the starting point two years ago, give an approximate index for the following (e.g., a 5% increase would be 105, a 5% decrease would be 95). (average of two indices) <ul style="list-style-type: none"> • Labor Productivity Index • Equipment Productivity Index
EG	Approximately how many total engineers are at this plant? (% of employees that were engineers)

associated with scale. Two other control variables—*average age of equipment* and *percentage of sales invested in new equipment*—reflected the propensity to upgrade older technology and recent investment in the plant. *Productivity*, measured by the average two-year change in labor and equipment productivity, controlled for the possibility that more productive plants have greater resources to invest in ESP. The *percentage of engineers* in the plant workforce was included to reflect the possible relationship between access to engineering expertise and capability to invest in ESP. Finally, *GDP adjusted to purchasing power parity (PPP)* was measured at the country level (Anon, 2009) and served as a proxy for general development and resource availability.

Assessing Common Methods Bias

To avoid common method bias from common respondent effects, the survey queried on separate pages the EES by senior management and ESP measures. Doing so prevents what Podsakoff et al. (2003) termed consistency motif—a respondent's propensity to maintain answer consistency. In addition, social desirability could also induce artificial correlation. Therefore we assessed the extent to which EES covaries with the ESP measures. Including EES as a scale measure creates a composite scale with extremely poor reliability (e.g., $\alpha = 0.257$), showing EES to be a clearly independent measure. We also employed Harmon's single factor assessment using all facility-level items of interest; only 23.8% of variance was explained. In sum, we find no concern for common method bias in our study.

Assessing Measurement Equivalence across Countries

To assess cross-country measurement equivalence within the single factor in the study (i.e., ESP), we follow the CFA method outlined by Rungtusanatham, Ng,

Table 6: Means of level-1 variables by country and industry group.

Group	ESP	EES	IO	SZ	AG	IN	PR	EG
Country								
Albania	4.24	9.67	.15	33.67	10.54	.32	104.47	.10
Australia	4.62	14.75	.29	315.44	14.32	.09	106.37	.07
Austria	3.95	7.07	.32	1030.73	8.49	.14	106.06	.27
Brazil	3.67	6.90	.04	241.10	12.38	.14	111.79	.01
Canada	4.12	13.02	.43	211.12	14.31	.05	109.21	.31
China	4.75	11.18	.65	1469.53	6.13	.22	117.70	.11
Croatia	4.40	11.92	.15	210.32	11.55	.14	107.56	.10
Fiji	4.48	14.60	.12	303.37	10.57	.27	103.26	.02
Finland	4.01	14.09	.26	125.56	12.32	.06	105.08	.14
Germany	3.52	7.26	.07	301.63	9.48	.13	106.16	.12
Ghana	4.40	13.81	.23	154.72	10.79	.20	108.79	.07
Hungary	3.90	7.95	.43	567.74	15.49	.09	106.61	.07
Ireland	4.57	11.22	.52	138.92	8.09	.10	107.01	.12
Italy	3.97	8.36	.11	155.89	11.66	.10	105.20	.02
Korea	4.66	12.31	.20	1792.42	13.18	.10	108.13	.17
Macedonia	4.24	7.92	.02	185.33	9.15	.16	109.18	.19
Mexico	4.16	20.78	.26	233.22	14.22	.22	110.75	.13
New Zealand	4.12	8.96	.13	113.54	10.13	.05	129.59	.16
Nigeria	4.09	11.26	.28	207.81	16.61	.21	111.06	.08
Poland	3.38	11.42	.09	347.74	13.03	.13	111.97	.10
Sweden	4.15	13.81	.42	395.50	10.19	.06	108.05	.19
Swiss	3.45	5.70	.29	440.65	9.53	.07	105.94	.15
Taiwan	5.18	9.02	.22	702.20	5.97	.26	121.75	.21
United States	3.85	11.00	.12	172.87	12.48	.07	106.74	.07
Industry group								
Food and related products	4.43	13.91	.15	284.57	11.86	.17	105.80	.06
Textiles, clothing, and footwear	4.10	14.64	.10	273.71	14.92	.16	107.92	.08
Timber and related products	4.22	12.46	.17	346.73	10.93	.18	105.89	.08
Petrochemicals and related products	4.37	14.17	.27	184.31	11.44	.13	106.48	.11
Metal-based products	4.02	11.12	.23	610.33	13.02	.11	106.59	.12
Computing, electronics, and related products	4.17	10.60	.33	604.87	9.49	.12	112.72	.17
Miscellaneous products	4.27	12.70	.21	289.12	12.80	.15	108.38	.12
Overall	4.20	12.10	.24	434.77	11.67	.14	108.68	.12
Intraclass correlation (ICC) by country	ESP	EES	IO	SZ	AG	IN	PR	EG
Intraclass correlation (ICC) by industry	0.69	0.85	0.92	0.85	0.77	0.94	0.75	0.84
		0.77	0.90	0.71	0.84	0.85	0.78	0.80

Zhao, & Lee (2008), and Malhotra & Sharma (2008). While challenging when a relatively small sample exists within each country, the CFA method provides a rigorous approach to measurement equivalence assessment. As suggested by Malhotra and Sharma, the primary concern for testing our theory is whether a single factor is consistently present in each country (configural equivalence) and whether the measurement items load similarly on this factor (metric equivalence). We assess for configural equivalencies through a multilevel CFA available in EQS (Bentler, 1995) to assess for a single factor within countries, and we assess metric equivalence through a constrained multigroup Confirmatory Factor Analysis (CFA) (see Table 2 for loadings).

We first establish configural equivalence by finding satisfactory fit statistics ($\chi^2 = 158.2$ (10), $p < .05$, CFI = 0.938, NFI = 0.934, RMSEA = 0.097) per previous studies (Malhotra & Sharma, 2008; Diamantopoulos & Papadopoulos, 2010). In addition, all within country loadings are significant ($p < .05$) and substantial ($\lambda > 0.4$). We next perform a multigroup CFA so to add constraints across countries and assess by use of the Lagrange multiple (LM) test (Bentler, 1995) whether constraint removal significantly improves model fit. With loadings constrained to be equal across countries, we establish metric equivalence by finding satisfactory fit statistics ($\chi^2 = 3706.0$ (212), $p < .05$, CFI = 0.934, NFI = 0.931, SRMR = 0.051). The loadings are satisfactory and the LM test does not estimate significant improvements via constraint release. Thus, both configural and metric invariance are established.

Testing of Moderation Effects

Hypotheses were tested using a cross-classified random effects modelling approach in HLM 6.0 (Raudenbush, Bryk, Cheong, Congdon, & Du Toit, 2004). This multilevel method differentiates facilities by both industry and country; and in so doing partitions the facility-level, industry-level, and country-level variances (Raudenbush & Bryk, 2002). At the facility-level, top-management's emphasis on environment and safety influences the extent that ESP are implemented. However, for each industry and country, facility-level influences are allowed to vary. Twenty-one industry groups were identified in the GMRG survey and these were condensed into seven categories. Through HLM variance portioning their effects were controlled (see Table 4 above for a breakdown of Industry sectors represented and the groupings used). The variance among the 24 countries was also partitioned and modelled to be dependent on the hypothesized country-level cultural dimensions (see Table 6 for mean values of level one variables by country and industry group). HLM is an attractive method because it accounts for sample size heterogeneity among industries and countries, thus reducing biases from larger samples (Raudenbush & Bryk, 2002) that is problematic in other methods like multiple regression interaction methods (Hofmann, 1997).

The cross-classified random effects model is shown below in hierarchical form:

$$\text{ESP}_{ijk} = \pi_{0jk} + \pi_{1jk}\text{EES}_{ijk} + [\theta_2\text{IO}_{ijk} + \theta_3\text{SZ}_{ijk} + \theta_4\text{AG}_{ijk} + \theta_5\text{IN}_{ijk} + \theta_6\text{PR}_{ijk} + \theta_7\text{EG}_{ijk}] + e_{ijk} \quad (1)$$

$$\pi_{0jk} = \theta_0 + \gamma_{01}[\text{PPP}_j] + b_{0j} + c_{0k}, \quad (2)$$

$$\pi_{1jk} = \theta_1 + \gamma_{11}\text{PD}_j + \gamma_{12}\text{UA}_j + \gamma_{13}\text{IC}_j + \gamma_{14}\text{CG}_j + \gamma_{15}\text{HO}_j + \gamma_{16}\text{FO}_j + \gamma_{17}\text{PO}_j + b_{1j}, \quad (3)$$

where,

ESP = investment in environment and safety practices

EES = importance that senior management places on the competitive goal of environment and safety

IO = proportion of international ownership

SZ = plant size as measured by number of employees

AG = average age of equipment

IN = percent sales invested in new equipment

PR = productivity

EG = percentage of engineers

PPP = country purchasing power parity (logarithmic)

In (1), the variance of investment in ESP is explained by the following: a random intercept varying by country and industry π_{0jk} , the influence of senior management's emphasis on environment and safety (EES) varying by country and industry π_{1jk} , nonvarying control effects (θ_2 – θ_7) shown in brackets, and error e_{ijk} . The average ESP in each country–industry combination with typical levels of EES is represented by the parameter π_{0jk} , which is explained in (2) by an intercept parameter, PPP and error. No cultural dimensions are included in (2) in order to focus on the culture-as-moderator perspective (Snijders & Bosker, 1999). Thus, the impact of the emphasis (percentage allocation) on EES is shown in π_{1jk} , with a positive (negative) estimated value showing an increase (decrease) in the extent of investment in ESP. Culture is included in (3) with the influence of EES π_{1jk} explained by a culture-neutral impact θ_1 , cultural influences represented by γ_{11} through γ_{17} , and error. Theoretically industry characteristics cause ESP variance, therefore a random effect c_{0k} is included in (2), while random effects b_{0j} and b_{1j} are included in (2) and (3) for country characteristics. All explanatory variables are grand-centered in order for the random coefficients to properly represent the average presence of ESP and typical influence of EES in each context.

The parameter θ_1 and parameters γ_{11} through γ_{17} are estimated in HLM to test H1, and H2 through H8, respectively. A generalized least squares procedure is used adjusting level-2 estimations to favor countries that have more precise level-1 estimates (Hofmann, 1997). In this process, level-1 and level-2 parameters are estimated for each country–industry combination and combined via an empirical Bayesian procedure optimally weighting the ordinary least squares level-1 estimates and the level-2 predicted values for these same estimates. Thus, HLM is used to

fit the multilevel model, giving point estimates and significance levels for each gamma parameter to test the research hypotheses.

RESULTS

The results from the cross-classified HLM analysis are shown in Table 7. Following Snijders and Bosker's (1999) procedure for computing the percent variance explained R^2 , an "empty" model without explanatory variables is first estimated to compute a base variance of ESP within-country σ^2 , between-country τ_{b0}^2 , and between-industry τ_{c0}^2 . Next, as explanatory variables are added, the model R^2 represents the percent reduction in error variance at each level. The empty model is first compared to Model 0, which includes only the seven fixed control variables: proportion of international ownership (IO), plant size (SZ), average age of equipment (AG), percent sales invested in new equipment (IN), productivity (PR), percentage of engineers (EG), and country PPP. The four statistically significant control variables indicated that greater investment in ESP tended to occur in larger plants, those with international ownership, more reinvestment, and interestingly, fewer engineering personnel (we expand on this in the discussion section). The change in deviation $\Delta D(df)$ was 74.2 (7), $p < .01$, revealing a statistically significant improvement for this model, relative to the empty model. Error variances between countries are much larger than between industries, implying that country-based factors are more influential than industry factors. The reliability estimate for π_{0jk} is 0.516 in Model 0, showing a moderate between-country ESP variance. Model 0 reduces level-1 and level-2 mean square error by 7.0% and 18.1%, respectively, indicating the control variables to have some explanatory power.

Next, Models 1(a) and 1(b) (Table 7) introduce the importance that senior management places on the competitive goal of environment and safety. Model 1(b) differs from 1(a) in that EES is allowed to vary across countries in 1(b). In both Model 1(a) and 1(b), EES positively influences ESP ($\theta_1^{1a} = 0.009$, $p < .01$; and $\theta_1^{1b} = 0.018$, $p < .01$) with significant changes in deviation values. In fact, not only does Model 1(a) improve from Model 0 ($\Delta D(df) = 13.4$ (1), $p < .01$), but Model 1(b) improves from Model 1(a) ($\Delta D(df) = 15.1$ (2), $p < .01$), thus supporting our theory that EES varies by country. Additionally, level-1 R^2 increases somewhat in Model 1(a) and 1(b): 8.1% and 11.0%, respectively. Level-2 R^2 also increases somewhat to 20.5% in Model 1(a), but increases more substantially to 28.1% in Model 1(b), showing again the importance of allowing the effects of EES to vary. Because of these significant model improvements and significant θ_1 estimates, H1 is supported. Subsequent models also show a significantly positive influence of EES on ESP. Note that error variances remain higher between countries than between industries, albeit the proportion is somewhat diminished. Reliabilities of ESP decrease somewhat from Model 0, indicating that when EES is accounted for that less between-class differences exists.

Model 2 includes the seven hypothetically influential cultural dimensions. To test that overall cultural differences significantly moderate the effect of EES—the change in deviation and the reduction in EES effect variance τ_1^2 are examined. Model 2 shows a significant improvement in deviation from Model 1(b)

Table 7: Cross-classification HLM results.

Dependent Variable: Investment in Environment and Safety Practice (ESP)					
Parameters	Empty Model	Model 0	Model 1(a)	Model ^c 1(b) ^c	Model 2
	Est. (SE) (<i>t</i> -value) [*]	Est. (SE) (<i>t</i> -value) [*]	Est. (SE) (<i>t</i> -value) [*]	Est. (SE) (<i>t</i> -value) [*]	Est. (SE) (<i>t</i> -value) [*]
Grand intercept					
θ_0	4.174 (0.094) (44.139) ^{***}	4.182 (0.085) (48.815) ^{***}	4.189 (0.082) (50.716) ^{***}	4.208 (0.076) (54.761) ^{***}	4.228 (0.075) (56.257) ^{***}
Control variables					
θ_2 (IO)		0.449 (0.086) (5.165) ^{***}	0.425 (0.086) (4.903) ^{***}	0.401 (0.086) (4.666) ^{***}	0.409 (0.085) (4.778) ^{***}
θ_3 (SZ)		0.001 ^{**} (0.001 ^a) (5.630) ^{***}	0.001 ^{**} (0.001 ^a) (5.511) ^{***}	0.001 ^{**} (0.001 ^a) (5.504) ^{***}	0.001 ^{**} (0.001 ^a) (5.577) ^{***}
θ_4 (AG)		0.002 (0.002) (0.872)	0.001 (0.002) (0.659)	0.001 ^{**} (0.002) (0.283)	0.001 ^{**} (0.002) (0.315)
θ_5 (IN)		0.603 (0.206) (2.925) ^{***}	0.608 (0.205) (2.967) ^{***}	0.587 (0.203) (2.882) ^{***}	0.614 (0.202) (3.027) ^{***}
θ_6 (PR)		0.001 (0.001) (0.959)	0.001 (0.001) (0.966)	0.001 (0.001) (1.125)	0.001 (0.001) (1.374)
θ_7 (EG)		−0.250 (0.122) (−2.037) ^{**}	−0.268 (0.122) (−2.198) ^{**}	−0.214 (0.122) (−1.759) [*]	−0.219 (0.121) (−1.802) [*]
γ_{01} (PPP)		−0.081 (0.091) (−0.884)	−0.080 (0.089) (−0.893)	−0.066 (0.079) (−0.828)	−0.135 (0.076) (−1.762)
Hypothesized Effects					
θ_1 EES (H1 +)			0.009 (0.002) (3.682) ^{***}	0.018 (0.005) (3.561) ^{***}	0.025 (0.004) (6.117) ^{***}
γ_{11} PD (H2 +)					0.028 (0.018) (1.563)
γ_{12} UA (H3 +)					0.036 (0.011) (3.075) ^{***}
γ_{13} IC (H4 +)					−0.001 (0.011) (−0.168)
γ_{14} CG (H5 −)					−0.013 (0.006) (−2.099) ^{**}

Continued

Table 7: Continued

Dependent Variable: Investment in Environment and Safety Practice (ESP)					
γ_{15} HO (H6 +)					0.010 (0.011) (0.895)
γ_{16} FO (H7 +)					-0.042 (0.019) (-2.169)**
γ_{17} PO (H8 +)					0.032 (0.017) (1.917)*
Deviance (D)	4662.1	4587.9	4574.5	4559.4	4537.7
ΔD (df)		74.2 (7) ***	13.4 (1) ***	15.1 (2) ***	21.7 (7) ***
σ^2 (Facility error variance)	1.400	1.334	1.323	1.297	1.291
τ_{b0}^2 (Country error variance)	0.157	0.114	0.108	0.090	0.087
τ_{c0}^2 (Industry error variance)	0.006	0.007	0.006	0.005	0.004
τ_1^2 (EES error variance)				<0.001	<0.001
Reliability					
π_{0jk}	0.584	0.516	0.506	0.464	0.458
π_{1jk}				0.015	0.003
Percent MSE reduction in $ESP_{ijk}(R_1^2)$	n/a	7.0%	8.1%	11.0%	11.5%
Percent MSE reduction in $\overline{ESP}_{.jk}(R_2^2)$	n/a	18.1%	20.5%	28.1%	29.3%
Percent error variance reduction $\tau_1^{2,d}$					78.3%

Notes: * $p < .10$, ** $p < .05$, *** $p < .01$

^aValues below 0.001 are shown as .001, ^bshows the influence of EES not affected by culture, ^cbased upon Model 1(a) with random country effects on EES influence b_{1j} added for comparison with Model 2.

^dApplies only to change from Model 1(b) to Model 2.

($\Delta D(df) = 21.7 (7)$, $p < .01$) and a substantial 78.3% reduction in error variance. This result provides overall support for cultural moderation.

Finally, regarding the cultural dimensions, four dimensions are found to significantly moderate the effect of EES, while three dimensions are found to not have a significant influence. Specifically, the dimensions with significant influence are UA $\gamma_{12} = 0.036$, $p < .01$; CG $\gamma_{14} = -0.013$, $p < .05$; FO, $\gamma_{16} = -0.042$, $p < .05$; and PO $\gamma_{17} = 0.032$, $p < .10$. These results support the hypotheses that

cultures that wish to avoid uncertainty (H3), that have less of an in-group focus (H5), that prefer to have a near-term orientation (H7), and that respond to performance objectives (H8), are more responsive to top-management's environment and safety emphases when implementing socially responsible practices. The remaining three dimensions—PD, IC, and HO—show no significant moderating effect. Thus, H2, H4, and H6 are not supported, which shows that EES will be equally effective at promoting ESP regardless of the cultural degree of power separation, collectivistic institutionalized rewards, and concern for human well-being. Thus, Model 2 reveals the importance of understanding a country's cultural practices when considering top-management's involvement in promoting environment and safety focused manufacturing practices.

DISCUSSION

Control Variables

Seven control variables were included in the model to account for variance generated from common contingencies. Of these seven, we found four to have some significant influence on investment in ESP. The results indicated that investment in ESP was more likely in larger plants with international ownership, more reinvestment, and with fewer engineers. The finding that investment is more likely in larger plants can be explained by the access to resources in these plants and by their greater scale. This is also consistent with plants having more resources for reinvestment also allocating some of this to ESP. Firms characterized by higher levels of international ownership having a greater propensity for investment in ESP is also a finding that is not surprising given the expectation of greater sophistication in their operations and of their also being likely to have access to required resources and exposure to international best practice. The finding regarding the number of engineers is surprising. It could be argued that a plant with a higher proportion of engineers is going to have greater access to expertise facilitating investment in ESP. This does not appear to be the case leaving a number of possible explanations. It could be that these plants have a stronger focus on the technical aspects of production rather than the softer side (e.g., focus on health and safety, recycling, etc.). Probably a more likely explanation, however, is that these plants are also more capital intensive and process based. These plants could be expected to have committed to process designs that will not be easy to change in the short term without significant disruption and/or cost. Whatever systems consistent with ESP are likely to have been designed into these processes already making further investment and resulting process change problematic, at least in the short term. It may also be the case that health and safety is less of an issue as there would be fewer unskilled employees working in this sort of environment. Whatever the real nature of this finding, it is interesting and to some extent could be interpreted as counterintuitive.

Of the other three control variables that contributed no significant variance (average age of equipment, productivity, and country PPP) those for both productivity and PPP are to some extent surprising. The fact that there is no variance explained by the age of production equipment is probably indicative of this being

less important than whether there is an actual re-investment strategy in place (i.e., captured by positive variance explained by percent sales invested in new equipment). Rather than equipment age being important this indicates that a propensity to invest in new equipment is a more important indicator of investment in ESP.

Productivity could be argued to be indicative of greater potential to reinvest and therefore also could be expected to explain some variance in investment. This, however, is not the case with a possible explanation being that (similar to age of equipment) the connection with investment is not with potential to re-invest (productivity), but with commitment to reinvest (percent sales invested in new equipment). The lack of variance explained by PPP was surprising given that it could be expected that plants in countries with greater GDP and stronger currencies would also be better placed to invest in areas that may not (at least in the short term) generate profit directly. However, this finding is perhaps indicative of higher GDP country plants having a stronger profit orientation—in other words they are stronger economically because they do not invest in programs that they may see to be peripheral to the core operations of the plant (a common perception of investment in ESP).

Rational Managerial Actions

The results strongly supported H1, namely that the importance that senior management places on environment/safety is positively related to the level of plant-level investment in environmental and safety practices. This finding provides support for the notion that investment in ESP at the plant level represents a “rational” managerial response to senior management placing a greater emphasis on environmental and safety performance in manufacturing firms.

Moderation of Rational Managerial Actions by National Culture

The results of this study indicate that national cultural characteristics are an important contingent factor moderating the expected rational managerial response to invest in ESP at the plant level in response to the importance that senior management places on environmental and safety (see Table 8). Although earlier studies have shown some effect on managerial actions for a single national cultural characteristic, or for a single or limited group of countries, this study provides strong evidence based on seven separate cultural factors based on a sample of 1,453 plants in 24 countries.

Power Distance

PD, or the extent of acceptance of inequity in distribution of power in a society, has been shown in prior studies to have a tendency toward self-perpetuation and to have a compounding effect over time (Mulder, 1977; Carl et al., 2004). As such, subordinates can become conditioned to, and dependent on, those holding power. As a result we argued that in a culture where high levels of PD are tolerated managers' investments in this area would be highly sensitive to the focus of those in power. The results indicate that this is not the case, as high tolerance of PD is shown to have no significant moderating effect on investment in ESP for our model.

Table 8: Table of results by hypothesis.

Hypothesis	No Support	Supported	Moderation Effect Observed
H1: The relative importance that senior management places on environment/safety is positively related to the level of plant-level investment in environmental and safety practices.		X	N/A
H2: The national cultural characteristic of power distance positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in environment and safety practices.	X		No
H3: The national cultural characteristic of uncertainty avoidance positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in environment and safety practices.		X	Yes
H4: The national cultural characteristic of institutional collectivism positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in environment and safety practices.	X		No
H5: The national cultural characteristic of in-group collectivism negatively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in environment and safety practices.		X	Yes
H6: The national cultural characteristic of humane orientation positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in environment and safety practices.	X		No
H7: The national cultural characteristic of future orientation positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in environment and safety practices.	X		Yes
H8: The national cultural characteristic of performance orientation positively moderates the relationship between the importance that senior management places on environment/safety and plant-level investment in environment and safety practices.		X	Yes

The explanation for there being no moderation due to PD may in fact lie in the nature of high PD cultures. In a high PD culture senior management focus on measuring environmental performance would be limited to situations where their specific interests were linked to such an activity. In such a society it could also be expected that a propensity to maximize profit would also predominate due both to the power imbalance and the propensity for the powerful to exploit the weak. On the other hand, decisions to invest in ESP related programs would also be limited by both the propensity to fall in line with expectations of those in power (senior management), and by the low likelihood of stakeholder pressure being exerted by this group on those in power. As such it may be that the weight that senior management places on environmental performance is low in these cultures and that plant managers are less inclined to invest in ESP generally. As such the propensity for positive moderation when investing in ESP in high PD cultures may be limited by the imbalance of power itself.

Uncertainty Avoidance

UA was found to have a significant positive moderating effect on the relationship between senior management focus on environment and safety performance and the propensity to invest in ESP. This result was not surprising given the proposition that societies high in UA can be constrained in the propensity to innovate (Shane, 1993; de Luque & Javidan, 2004) by the need for ambiguity to be reduced by direction from above. The result in this study is consistent with this need to avoid ambiguity being accommodated by a higher sensitivity to the cues of senior management. Both UA and PD are associated with low levels of stakeholder pressure within a society—a characteristic associated with propensity not to invest in this area (Henriques & Sadorsky, 1999; Sharma & Henriques, 2005; Gonzalez-Benito & Gonzalez-Benito, 2006). Despite this the result indicates that the risk and ambiguity aversion in high UA societies manifests itself in the investment decision being more responsive to senior management focus in this area.

Hofstede's definition of UA (and that used by GLOBE derived from this definition) identifies the key characteristic as being the ability of a society to cope with uncertainty leading to a preference for structure, clear legal boundaries, and the elimination of ambiguity (Hofstede, 2001; Hofstede & Hofstede, 2004). The result indicates that a propensity for legal frameworks and low tolerance for ambiguity appears to promote a higher sensitivity to emphasis placed by senior management on environment and safety is manifested in the extent of investment at the plant level. It would therefore appear that this requirement for certainty finds expression in the responsiveness of managers to signals to invest in practices conducive to improving the environment.

Institutional Collectivism

Our results indicate that IC does not moderate the relationship between performance assessment and investment in ESP. In generating our hypothesis our argument was based around the notions of the “collective will” and the “common good” increasing the likelihood that managers would respond positively to the objectives set by senior management toward environmental performance. It has, however,

been shown that Hofstede's measure of individualism/collectivism (Hofstede's measure of individualism [IDV] that most closely approximates the GLOBE measure of IC but measured as Individualism) and PD are negatively correlated (i.e., Collectivist cultures are associated with high PD). As such our results are consistent with those for PD (also no significant moderation recorded). We argued above that in high PD cultures the nature of the power imbalance may explain the lack of moderation. Given the correlation between IC and PD it is plausible that this same effect is experienced in high IC cultures. It is also noteworthy, however, that our argument for a positive moderation was based largely around a keener awareness of the inherent benefits of investment in ESP and a propensity to focus on "the common good," and that this result indicates that high IC is not enough to promote positive bias toward investment in ESP. If we extend the argument above for the correlation with PD, perhaps self-interest due to power imbalance is a powerful antidote to taking action for "the common good."

In-Group Collectivism

The result for CG is as hypothesized with a negative moderation recorded. As a result it could be proposed that this result indicates that managers in societies high in CG, being more focused on valuing, creating and maintaining tight family groups, may also be less sensitive to perceived expectations of senior management than to those of local coalitions. The pressure exerted by senior management measuring environmental performance could therefore plausibly be counteracted by the loyalty to, and focus on, the needs of the local family group, particularly where there is significant economic pressure to do so. In addition, ESP's focus on benefits to others beyond the local group will perhaps be less meaningful to managers in high CG cultures consistent with the recorded negative correlation between high CG and "The Human Condition." The GLOBE authors also indicate that CG is associated with vesting power in elites and being unconcerned with the need for structures that will reduce ambiguities (Gelfand et al., 2004). As a result, CG seems to be consistent with a narrower local focus that will not be conducive to encouraging a positive managerial response by investing in environment and safety programs, even though senior management may see this to be a priority.

This finding is also consistent with a positive correlation recorded in the GLOBE study between CG and HO, as well as CG and PD. Neither HO nor PD were found to be positive moderators in this study, providing results consistent with there being no positive moderating effect attributed to CG. The GLOBE authors also note that CG is negatively associated GNP per capita ($r = .76, p < .01$ – Gelfand et al., 2004 p. 481) "... making it difficult to separate the two analytically." In our study, we have controlled for GDP at PPP (a measure with enough similarity adjusted to variations in exchange rates) and we still record a significant negative moderation indicating that the result is unlikely to be able to be attributed to economic factors.

Humane Orientation

The lack of a moderating effect recorded for HO is to some extent surprising. However, this characteristic is in many ways the opposite of PO in that it rewards

“... individuals for being fair, altruistic, friendly, generous, caring and kind to others” (House & Javidan, 2004 p. 13). As such the focus is on “nurturing” rather than a more hard-edged competitive and performance focus. Strategic directives from senior management are therefore perhaps less likely to be motivating for managers in high HO cultures. Additionally, our hypothesis for a positive moderation was based on the association with a collectivist mindset (specifically IC) and the expectation that plant-level investment decisions would be sensitive to senior management objectives based on the greater benefit to the collective. Our findings for IC were that this was not the case so this result for HO is also consistent with this. As such, it would appear that although this cultural dimension has characteristics that *prima facie* make it appear conducive to a positive moderating effect on investment in this area, the reliance on apparently altruistic characteristics and a “nurturing” mindset, as also found with IC, may not be powerful enough. Or put another way, one may be fair minded and caring leading to a higher awareness of the inherent benefits of investment in ESP, but the evidence suggests this may not be enough to neutralize self-interest for the common good.

Future Orientation

The GLOBE measure FO has a strong focus on forward planning, the relationship between current actions and future outcomes, understanding of future contingencies and being able to develop meaningful future state scenarios (Ashkanasy et al., 2004). FO is about scanning the external environment, understanding where society needs to be in the future, and mapping a path to get there. The negative effect recorded is therefore inconsistent with our hypothesized position that a strong focus on future implications of current actions results in investment decisions being more sensitive to such implications increasing the likelihood of investment in ESP when senior managers are measuring environmental performance. One possible interpretation of this counterintuitive result is that in strong FO societies such a strong focus on planning for future states reduces focus on issues today to the point where action now is difficult to associate with what is being measured now—or put another way that in the extreme too much analysis leads to paralysis. This is alluded to by the GLOBE authors when they recognize the observed dislocation in some high FO collectives between present and future realities (Ashkanasy et al., 2004).

As such a “rational” response to senior management focus on environment and safety performance may be to respond with higher levels of investment, but this may be negatively moderated by a lack of awareness of present and immediate realities. Further evidence for this proposition is provided by Hofstede’s discussion of his “Long Term Orientation” construct (a forerunner of the GLOBE FO measure), which he describes as being consistent with thrift, propensity to save and persistence (Hofstede, 2001). This is a counterintuitive position, but the focus of this study is on the relationship between senior management focus, investment in ESP and the potential for national culture to create a deviation away from an expected “rational” response. Under such a scenario it is plausible that a manager in a high FO culture may be investing in ESP—but that measurement by senior management may not be the driver of the decision to invest in ESP within such

a culture. In other words, one possible explanation is that in a high FO culture managers' sensitivity in the immediate term to what their superiors value may be counteracted by their own long-term objectives.

Performance Orientation

The positive moderation recorded for PO is as hypothesized and provides support for the proposition that placing more emphasis on environment and safety goals by senior management in a high PO society results in a more positive bias toward investment in practices. In this sense, managerial bias to invest in ESP in a high PO culture can be expected to be amplified as a high value is placed on the achievement of objectives, and managers can be expected to have a strong task and outcomes focus. Sensitivity to the focus of senior management can therefore be expected to be high in a high PO culture.

IMPLICATIONS FOR THEORY

This study contributes to theory in a number of ways. First, using data from a total of 1,453 plants in 24 countries, we test how seven national cultural characteristics influence or shape managerial decisions about plant-level investment in ESP. In the study of operations management the importance of identification of contingent factors influencing the decisions of operations managers at the plant level has increasingly been recognized (Sousa & Voss, 2008). This study identifies an important contingency for the operations function (national culture), and measures the effect it has at the plant level in a significant multicountry study. The important role of context when studying the management of operations, and in particular the international context, is highlighted by this study. When manufacturing activity is progressively becoming more subject to the pressures of globalization the need for understanding of this context is amplified. The relevance of contingency theory to operations, and the importance of identifying and understanding key contingencies for managerial decision making is therefore an important theoretical implication of this study. Further, when assessing decision making in operations the assumption of managers pursuing a "rational" path (as per positivist microeconomic theories such as Rational Choice) must also be called into question given the evidence of the contingent nature of investment in ESP from this study.

Secondly, of particular interest is that for the national cultural characteristics where a significant variation from the expected "rational" response was recorded, as well as for those where no significant deviation was found, key differences were noted based either on the direction of the bias, or on there being no bias. Where a positive bias was recorded (UA and PO) our results indicate that the bias to invest (or not so) is attributable to national culture moderating actions based on where the signal (measurement of performance) was coming from. In other words, the positive bias recorded can be interpreted as indicative of a high level of sensitivity to the (implied or explicit) wishes of senior management. On the other hand, where a negative bias was recorded (CG and FO) evidence suggests this is attributable to the importance placed on the interests of local collectives as well as some lacking of local awareness due to a focus on future outcomes. Both characteristics

are shown to be more highly valued than (and therefore neutralizing) implied or explicit wishes of senior management. For a positive moderation willingness to please senior management was key, whereas for a negative bias loyalty to familial collectives and a focus on the long term leading to inaction in the present were important. In both cases the evidence implied that investment was essentially being moderated by where the interests and loyalties of decision makers lay. However, of particular interest is that for the three national culture types where no bias was recorded (PD, IC, and HO), our arguments for two of these (IC and HO) relied heavily on each cultural type influencing attitudes positively on the basis of ESP being perceived to be worthwhile and “for the common good.” In other words, national culture was argued in these cases to amplify managers’ perception of the importance of investment in ESP based on the inherent merits for society of doing so. This, however, was not supported by our evidence.

Our findings therefore indicate that (in terms of national culture) investment in ESP will vary more based on perceived interests and loyalties than it will based on the collective benefit that may be realized. This is manifest through either the propensity for managers to “fall in line” with senior management (positive bias) or on whether they belong to societies characterized by familial loyalties and/or have their sights set on longer term objectives at the expense of current action (negative bias). The inherent merits of ESP, however, do not seem to be a significant factor as there is no evidence indicating that national cultural characteristics consistent with valuing these benefits have any moderating effect on investment. This is particularly evident from there being no positive moderation recorded for IC and HO—both of which (similar to FO) are intuitively consistent with values supporting investment in ESP. This is an important finding as it serves to highlight that investment in this area, at least at the plant level when viewed through the lens of national culture, is more likely to be influenced by an alignment with the loyalties and interests of managers, and less by the inherent worthiness (or indeed logic) of doing so. As such cognizance of the cultural biases of managers is shown to be more important than what might be assumed to be the unquestionable merits of investment in ESP.

Thirdly, in assessing these relationships we use measures of national cultural bias based on constructs developed by the GLOBE studies. The GLOBE studies build on the earlier work of Hofstede in that the seven dimensions used in this study are either derivatives of Hofstede’s original five dimensions, or have very similar roots. As such the theoretical grounding of the study has been more completely established and articulated and groundwork created for future research in operations using national culture as a contingent moderating factor of decision making in operations. The study of operations management has been evolving away from one with an internal functional focus to include the influence of factors outside of the function, the plant and the firm. This study provides such a perspective and presents evidence that the field of operations management can benefit from providing a wider context within which to conduct empirical research.

Fourthly, in framing the argument for the general hypothesis of this article the discussion focused on the GLOBE study prediction that there can be significant variance expected in managerial decision making across cultures (House *et al.*, 2004). The results indicate that the classic theory of the firm perspective whereby an organization is assumed to exist to maximize profit alone, and that managers as

a result can be predicted to make decisions in a “rational” way, is contestable. The influence recorded in this study of national culture on investment in ESP provides evidence for the contingent view that firms cannot exist outside of their cultural context. Put another way, the strategic goals of a firm will always be subject to a complex array of forces such that the expectation that decision making can be predicted to be “rational” will in part be determined by national cultural norms.

Finally, as innovations in operations diffuse across economic regions and national borders the results further imply that both the rate and extent of adoption will be in part culturally determined. The results indicate that adoption of innovations such as ESP will at least in part be contingent on the national cultural context within which they operate. It can therefore be expected that initiatives such as investment in ESP will find fertile ground in economies strong in some of these traits while the opposite may be the case in others. The important contingent role of national cultural characteristics in providing conditions conducive to the diffusion of other innovations in operations is therefore implied by the study results.

IMPLICATIONS FOR PRACTICE

At a practical level this study provides valuable insights for managers assessing investment decisions of this type both at the plant and corporate levels. For the corporate manager, particularly in a multinational enterprise, insights are provided into the cultural nuances relevant to how they measure performance, and how they can expect this to translate into action at the plant level across multiple international locations. Facility location is an issue that is often determined solely on the basis of economic criteria at the expense of key strategic factors. This study provides some insight into an important contingent factor, national culture, which should not be ignored when seeking to understand the actions of managers when responding to performance measurement. Where there is significant environmental risk associated with facility investment internationally a clearer understanding of cultural nuances becomes increasingly relevant.

Understanding the contextual cultural influences relevant to decisions of this nature for a plant in a specific location can help to guide and inform. In particular, for multinational firms with plants in multiple geographic locations having realistic expectations around the response of individual plant managers, and subsequently moderating the form and content of the emphasis placed on performance management, becomes critical in light of these results. In particular, an understanding of when and how to emphasize long versus short-term benefits of specific initiatives, along with an awareness of the potential power of setting clear and unambiguous goals in particular cultural settings is highlighted. Such an understanding has further implications for expectations regarding the best way to motivate supplier development (particularly for a multinational with local suppliers) toward investment in ESP. Managing a workforce drawn from a society whose values may be different from those with which the manager and/or parent company is familiar is a common scenario. Having a practical appreciation of the cultural factors that may either inhibit or promote managerial bias toward investment in environment and safety is therefore of value to the plant manager.

Further, understanding how managerial decisions are colored by national cultural characteristics has implications for the development of policy formed in order to promote environmentally friendly investment. Understanding the cultural biases of managers and the influence they can have provides a basis for the development of more realistic policies likely to facilitate intended outcomes. The insights from this study provide policy makers with some understanding of the management challenges associated with policy implementation in an international context.

LIMITATIONS AND OPPORTUNITIES FOR FURTHER RESEARCH

All research is subject to limitations. In this study it is recognized that the independent variable used combines the relative importance that senior management places on environment/safety in a single item. As such it is not possible to separate the two in the dependant variable in order to facilitate differentiating between moderation of national cultural characteristics for environment and safety individually. This limitation points to an opportunity to design a future study where such differences could be examined. Future researchers may want to explicitly separate the safety issue from the existing scale, and also measure it more robustly than just through a single item.

As well as providing insights into the role of national culture in the context of managerial bias toward investment in ESP, this article also provides significant opportunities for further research. Of particular importance is to also promote a better understanding of the relationship and/or interaction between national culture and organizational culture in this context. Further to understanding the nuances of national cultural characteristics generalized across multiple plants within a country it would be of great value to assess how organizational climate at the local level affects these results.

The findings of this study show that it is critical to factor in managerial cultural bias when assessing the alignment of objectives of senior managers with the investment decisions of plant managers. In the context of ESP, understanding this process becomes even more important as there is not always an obvious financial or operational benefit associated with investments of this type. As a result it would be worthwhile investigating other possible moderating factors affecting investment decisions of this type based on theoretical perspectives such as Theory of the Firm, Stakeholder Theory, or Institutional Theory.

This study also highlights that national culture is an important contingent factor in understanding the role of operations in the firm. Further studies incorporating national culture could include a focus on the role it plays in determining investment choices related to other competitive dimensions such as quality, cost, delivery, and flexibility. The GLOBE studies have also developed measures for other characteristics such as leadership based around national culture. Given the wealth of literature identifying the critical role of leadership in operations the incorporation of these dimensions as moderators into studies related to operations capabilities and the development and implementation of operations strategy would also be worthwhile.

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APPENDIX

CORRELATIONS BETWEEN ALL VARIABLES IN THE ANALYSIS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Environment and Safety Practice	1																				
2. Competitive Goal of Environment / Safety	.120**	1																			
3. International ownership (%)	.154**	.083**	1																		
4. Total plant employees	.174**	.028	.078**	1																	
5. Ave age of equipment	-.001	.077**	.011	-.022	1																
6. Invest in new equipment	.117**	.020	-.031	.002	-.097**	1															
7. Productivity	.039	-.009	.020	.024	-.078**	.046	1														
8. Percentage of Engineers	-.040	.038	.052*	.023	-.057*	-.058*	.039	1													
9. Food and related	.053*	.045	-.068**	-.026	.005	.062*	-.038	-.066*	1												
10. Textiles and related	-.019	.050	-.088**	-.022	.068**	.036	-.008	-.038	-.068**	1											
11. Timber and related	.005	.009	-.060*	-.016	-.020	.081**	-.038	-.049	-.088**	-.070**	1										
12. Petro-Chemicals and related	.040	.053*	.021	-.045	-.006	-.007	-.030	-.013	-.088**	-.070**	-.090**	1									
13. Metal based products	-.071**	-.040	-.011	.051	.059*	-.094**	-.046	-.013	-.142**	-.112**	-.146**	-.146**	1								
14. Electronics and related	-.015	-.080**	.158**	.064*	-.124**	-.066*	.115**	.109**	-.184**	-.146**	-.189**	-.190**	-.305**	1							
15. Miscellaneous Industries	.028	.028	-.044	-.048	.056*	.052*	-.007	-.001	-.160**	-.127**	-.164**	-.165**	-.266**	-.344**	1						
16. Power distance	.009	-.048	-.069**	.110**	.029	.007	-.021	-.072**	-.083**	-.037	-.042	.001	.029	-.113**	.193**	1					
17. Institutional collectivism	.093**	.045	.103**	.157**	-.024	-.122**	.028	.104**	.021	-.112**	-.042	.079**	.032	.144**	-.163**	-.023	1				
18. In-group collectivism	.143**	.055*	-.032	.119**	-.026	.332**	.022	-.092**	.079**	.133**	.061*	.036	-.170**	-.121**	.104**	.369**	-.153**	1			
19. Humane orientation	.105**	.087**	.150**	-.069**	-.042	.029	-.015	.022	.136**	-.066*	.013	.048	-.095**	-.016	.014	-.504**	.344**	-.161**	1		
20. Uncertainty avoidance	-.085**	-.011	.111**	-.072**	-.070**	-.123**	.001	.093**	-.050	-.107**	-.074**	-.046	.029	.202**	-.077**	-.329**	.264**	-.685**	.273**	1	
21. Future orientation	-.045	.032	.087**	-.031	.007	-.163**	-.070**	.117**	-.029	-.129**	-.087**	-.010	.009	.073**	.062*	-.195**	.367**	-.625**	.382**	.725**	1
22. Performance orientation	.050	-.038	.037	.109**	-.050	-.057*	.049	.111**	.011	-.089**	-.074**	-.002	-.073**	.235**	-.095**	-.241**	.500**	-.223**	.377**	.276**	.439**

* p<.05, ** p<.01

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